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PROSPECT FOR RAMIE IN THE LOWER SOUTH

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To many in the lower South, production of ramie fiber looms large on the post-war agricultural horizon. Most of these are experimenters or promoters. The consensus among agricultural experts in the South is that ramie offers some unsolved problems, two of which are the removal of fiber from the stalk (decortication) and the removal of gum from the fiber (degumming). The more enthusiastic group say that machines to separate fibers and gums have recently been perfected; the more skeptical experts point to the lack of commercial production of these machines. That experimental ramie production has been heralded as successful by both groups of men is indeed significant and worthy of an unbiased study.

Ramie (*Boehmeria nevia*) has long been known in the Orient and is one of the oldest and strongest fibers grown by man. A pest in China for centuries, the tall stingless nettle (a member of the hemp family) is found thruout sections of southeastern Asia—from Japan to Sumatra and westward into India, including the Philippines. But little has been marketed from this fringe of Asia; consequently the United States, France, England, and Germany have imported only varying tonnages of imperfectly-degummed fiber from year to year. Orientals decorticate ramie by hand beating and scraping. Since the little "China grass" imported into the United States is usually Grade D or even E, it could never form the basis of any important domestic industry. For nearly a century (having been introduced from Java in 1855) ramie has been a "sleeper" among our agricultural crops and has been relegated to Botanical gardens—attributable partly to the prospective difficulty of meeting competition from cheap labor in China should we try to grow the plant commercially. Only during the recent war when there pre-

vailed a serious shortage of fibers, did we seem to realize the merits of growing our own ramie, and that a domestically produced Grade A fiber, would make possible a high-grade cloth in place of the Grade B usually made from imported "China grass."

DOMESTIC EXPERIMENTATION AND PRODUCTION

The most extensive experimental plots have been planted by companies interested in testing new machines and methods of preparation. State agricultural experiment stations, companies, prison farms, and individuals also have participated. Except for California, experimentation has been conducted largely along the lower South Atlantic states, either on well-drained loams or artificially drained alluvium or muck.

Of primary significance is the Everglades' experiments with ramie, for here is an established cash-crop area which needs diversification. It has a productive nitrogenous soil, developed drainage districts, a sub-tropical climate, and has enterprising men with capital. During the last hurricane (September 15, 1945) 60 per cent of the ramie crop at Belle Glade was lost, but replanting soon followed. Dr. Nathan Mayo, Commissioner of Agriculture for Florida, states that recent purchases of land and plants by industrial companies will shortly run up the planted acreage to 10,000. Today near the south shore of Lake Okeechobee machines are in operation that for the first time in history can harvest ramie, decorticate and degum it. These machines are small however, and small machines mean a relatively low hourly production. Improvements in mechanization are being confidently predicted.

Dr. D. G. Sturkie, Agronomist at Alabama Polytechnic Institute, Auburn, Alabama, says that ramie can be easily produced in Alabama with a yield of 500-600 pounds of pure fiber per acre cutting on fertile soils. He further states that larger yields can be expected from the fertile Everglades muck and peat, but that it remains to be proved whether the quality of the fiber is as good as that in Alabama. A processing plant was installed in Atmore, Alabama, but has been closed for two years, consequent upon the lack of a portable field decorticator to take care of the Atmore State Farm crop. The factory management stated to prison farm authorities that the Atmore ramie was not tall enough and that in their opinion *Boehmeria n.* could be grown more profitably farther south.

Louisiana trial plantings on bluff-land soil near Baton Rouge

have proved satisfactory. Dr. G. T. Dowell, former Director of the State Experiment Station, explained just before the last War that, while the production of ramie in south Louisiana was a fairly simple and easy matter, the preparation of the crop for use in manufactur-

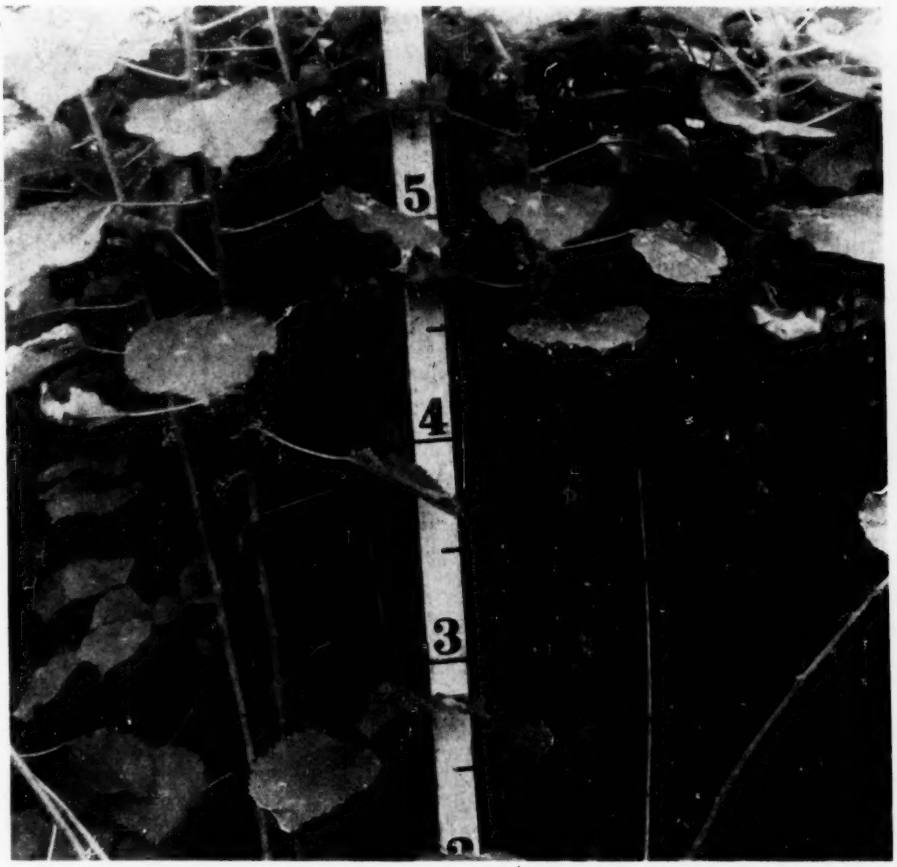

Fig. 1. Close-up of upper portions of ramie plants. Seed clusters as well as leaves are attached directly to the main stem. (Courtesy of Everglades Experiment Station, Belle Glade, Florida)

ing cloth is very difficult. No one should be advised to grow ramie until a method has been worked out by which the fiber can be obtained from the plant satisfactorily.

FIBER CHARACTERISTICS AND SUGGESTED USES

The following figures for comparison of ramie with other fibers are generally considered valid. Drs. Carter and Horton of Louisi-

ana State University, Baton Rouge, compiled them in 1936. The term "tensile strength" means resistance to longitudinal stress; "torsion" refers to resistance to internal dislocation and injury when twisted.

COMPARISON OF THE PROPERTIES OF RAMIE AND OTHER FIBERS

	Ramie	Flax	Cotton	Hemp	Silk
Tensile Strength	100	25	12	36	13
Elasticity	100	66	100	75	400
Torsion	100	80	400	95	600

The following list of other important characteristics of ramie is taken from a staff report of the Office of Production Research and Development, War Production Board, entitled, "The Possibilities of Ramie," *The Chemurgic Digest,* April 30, 1945:

Dry, clean ramie fiber consists of from 97 to nearly 99 percent pure cellulose. Whitford ascribes the extraordinary strength of the fiber to the continuity of the cellulose crystals, these crystals lying parallel to the fiber axis in ramie and being inclined to the fiber axis in cotton.

Other important characteristics of ramie include the following:

1. Its tensile strength is from 30 to 60 percent greater when wet than dry.

2. It is more highly absorbent than cotton, since ramie will hold water to the extent of 28.5 percent of its dry weight while cotton will hold only 26 percent.

3. It absorbs water more quickly than flax, dries out more quickly than flax and it is affected very little by this moisture.

4. It yields no lint as cotton does.

5. It can be spun and woven on all standard textile machinery now utilized for cotton, silk, wool or rayon, either alone or blended with other materials.

6. It takes commercial dyes well and holds its color better than other fibers.

7. It prevents shrinkage in woolen goods.

8. Its individual fiber cells are longer than those of any plant yielding textile or cordage fiber which is utilized in commerce. The "staple" or ultimate cells of ramie fiber range from one-half inch to 20 inches in length and average 6 to 8 inches. Ordinary cotton staple is seven-eighths to one and one-fourth inches long. Above this it becomes "long staple" cotton. The ultimate fibers of flax and hemp average about one and one-fourth inches in length. The great length of ramie permits its spinning into very fine numbers of great strength.

9. It is light and cool, washes well and in clothing it absorbs perspiration easily and dries quickly. It is, therefore, a superior fiber for summer.

10. Its high cellulose content and strong resistant fibers make it suitable for making high grade papers for special purposes such as bank notes or bond papers where strength, rattle, elasticity and opacity are required.

11. Goods of ramie can be washed more easily than any other textile, and the more tenacious stains can be removed. The dyed fiber, however, is equally resistant to washing, sunlight or rays of the mercury lamp as the dyed fiber of cotton.

12. Blended with other fibers, rayon, cotton, wool, it produces attractive new fabrics which in the opinion of textile operators, will tend to increase rather than decrease, the demand for the fibers with which it is blended.

The fiber of ramie is then, very handsome, resembling silk, and

is exceedingly strong. Because of its great tensile strength when wet, resistance to decay in water, and non-shrinkable properties, ramie was used by the United States Navy and Merchant Marine for mechanical packing, cordage, tents, and tarpaulins. During the war, Britain utilized its excellent durability in service as fire

Fig. 2. Close-up of lower part of plants shown in Figure 1. Several stems have grown from each planted piece or root. (Courtesy of E.E.S.)

hose, flexible water mains, and as mechanical belting. The Canadian Air Corps used ramie for parachute harness. As filter cloth for air-conditioning plants and in incandescent gas mantles, manufacturers in the United States were praising ramie highly even before the war. In spite of ramie's low torsion strength, its possible use in tires is not being overlooked. Experiments in high-quality thin but

tough paper place the fiber exceptionally high on the list of possible materials. Equally as desirable as more durable clothes are better household fabrics: bed sheets, pillowcases, table linens, portieres, and drapes. Europeans find ramie useful in rugs, carpets, plushes, and upholstery covers.

Dehydrated ramie leaves make an exceptionally good cattle and poultry feed, experiments in the Glades have shown. Thus it is obvious that *Boehmeria n.* has an impressive list of possible uses.

PHYSICAL CONDITIONS FAVORABLE FOR RAMIE CULTURE

The optimum of growing conditions for ramie is in the subtropics; this is, therefore, the zone where commercial development has taken place in the Old World and where the possibilities are greatest in the United States. The plant appears to be stimulated by a rest interval coincident with a brief period of cold weather. Frosts should not penetrate the soil more than about three inches, otherwise root stocks will be weakened or even killed. Frozen ramie stalks, however, usually yield heavy returns when cut from undamaged roots. Ramie requires a long growing season with ample, well-distributed rainfall of over 40 inches. Thus the most favorable region for commercial production in the United States would be the southern half of the "Cotton Belt" states, but back from the Gulf beach some 35 miles in order to avoid poor drainage in the Flatwoods and sterile Leon-Bladen soils. Texas and California would offer the plant the necessary annual temperature conditions (without winter mulching), but here as near Fort Liberte, Haiti, irrigation would be necessary. In the northern Everglades the southern shores of Lake Okeechobee is a small region where climatic conditions are as favorable for summer production of ramie as they are for cool season growth of sugar cane.

In the "lower" Gulf states ramie has been grown in an experimental way on a wide variety of soils, ranging from the light, sandy loams of the uplands (coastal terraces of inner plain) to the rich, alluvial Louisiana bottom lands. Well drained, light-textured, alluvial soil types make for the best growth. Peat and muck are also very productive. Either drouths or drouthy soils curtail plant growth. Of tremendous importance is the fact that ramie yields especially well on fertile, highly nitrogenous soils. Soils in the "lower" South are worn out; thus only by careful farm practices which pivot about restoration of soils, could ramie be profitably

grown. The acidity of the Red and Yellow podzolics would be generally favorable if the pH were regulated between 5 and 6, which would usually necessitate some liming.

FROM FIELD TO FACTORY

The growth of ramie presents no serious problems to Southern experimenters, but there are difficulties in decorticating and degumming it which must be met by technological improvements if the fiber is to be marketed profitably.

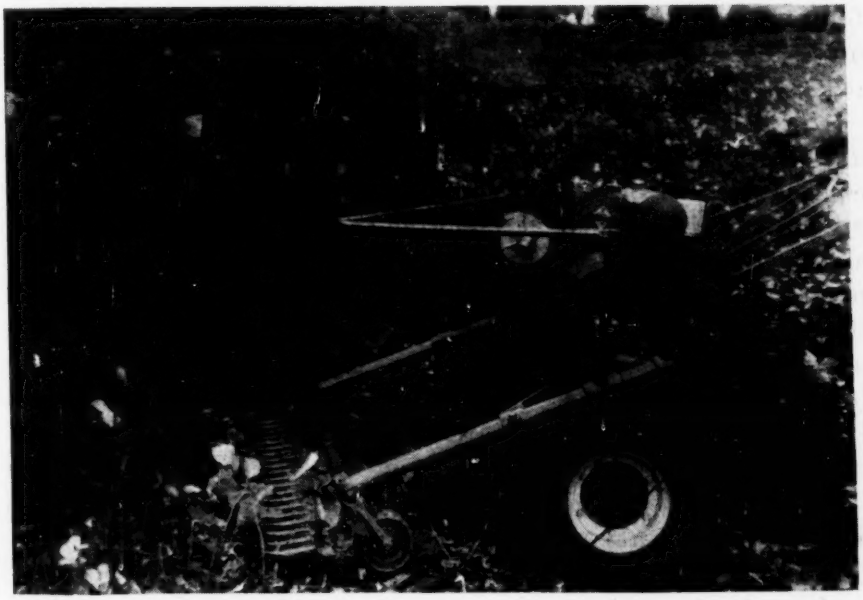

Fig. 3. Power sickle mower used to cut ramie on Everglades Experiment Station, Belle Glade, Florida. The sickle, in front of the machine, is 3½ feet wide. (Courtesy of E.E.S.)

Culture. Ramie may be grown from either rootstock or seed between March and November. It is usually propagated by planting root sections about six inches long in rows about two inches below the surface. A common spacing is four feet between rows and two feet in the row. This requires over 5,000 roots per acre. Elimination of weeds, by hoe or cultivator is necessary until the ramie stalks shade the spaces between rows. For vigorous growth, Everglades' experiments show that an application of 500 pounds per acre-year of 2-6-36 formula produced average per acre-year cut-

tings of 2,140 pounds for five consecutive years, 1938-42. Small quantities of copper sulfate, and sulfates of manganese and zinc and of borax proved especially helpful as minor elements to restore balance of available plant food. The first crop contains little merchantable fiber and thus the cutting is left to fertilize the field; the second crop is thus not only sturdier and thicker, but requires no cultivation. The second crop grows faster than the first and attains a height of about five feet in three months. From three to four cuttings annually are obtained in the Everglades, but farther north the shorter stalks would likely be cut only two to three times per year in order to yield desirable fibers.

Harvesting and Yields. Cutting the slender green stalks when growth has stopped is readily accomplished with an ordinary mower equipped with a sickle bar (Fig. 3). In China, however, many hands are employed to cut ramie from the small patches. The leafy tops and leaves growing out of the stalk form 30 percent of the ramie plant. This material is cut away, either in the field or just before the decortication process. In the future this leafy material (containing seven-eighths of the plant food of the stalk) will either be used for fertilizer or for dehydration into cattle and poultry feed meal. It is estimated that about three tons of dry meal could be made from a normal annual yield of 45 tons of green material per acre; this assumes the estimated normal average annual yield of ramie fiber at a figure varying from 1,200 to 1,500 pounds per acre (three cuttings).

Decortication. Removal of fiber from the stalk is the "Himalayan hump" of commercial ramie production. In China it is done by hand, laboriously and imperfectly, making a B-grade fiber at best.

Harvesting in the humid, hot summer brings up problems of artificially drying at added expense. It is generally agreed that the fiber should be loosened from the green stalks shortly after cutting in order to save the expense of artificial drying after the hot, humid summer harvesting. Fibers are then clean, white, and undamaged. Whether there should be movable field decorticators or a centrally located decorticator is at present a matter of dispute.

It is of great interest that there are on the Dauphin Plantation at Fort Liberte on the north coast of Haiti four Corona machines (designed by the Krupp Works of Essen, Germany) which decorticate green ramie stalks at the rate of about 250

pounds of dry fiber per hour. In the Everglades there are several other types of machine doing this work efficiently. In 1944, the Short machine decorticated 45 acres of ramie, with the aid of six men, but the output was low. A new model of the Short machine has been perfected since then, which increases the output capacity

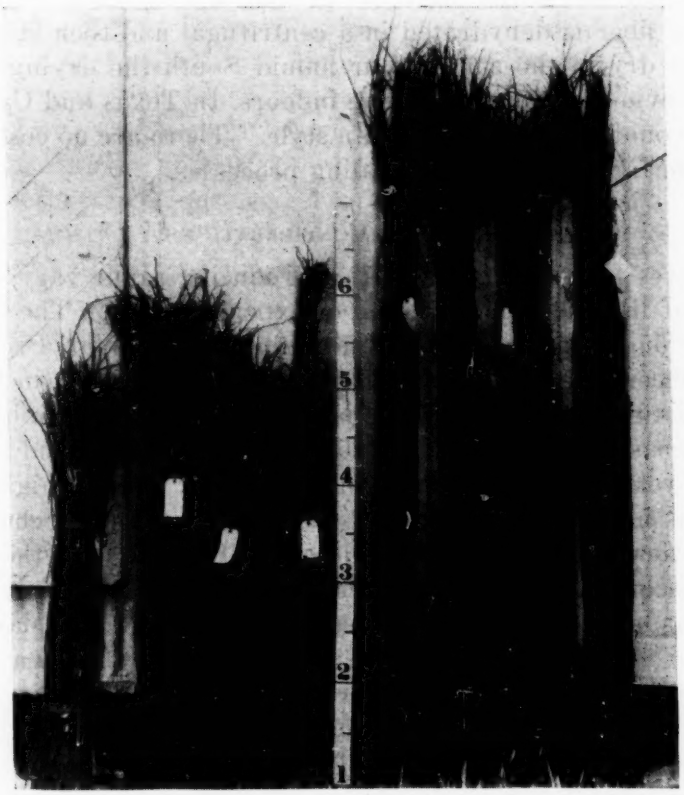

Fig. 4. Bundles of air-dried ramie stems, representative of those used to determine fiber content. (Courtesy of E.E.S.)

to two and one-half times that of the earlier model and reduces the labor two-thirds at the same time.

Degumming. The second obstacle to be overcome if Grade A fiber is to be produced commercially in the southeastern United States is to find a satisfactory method of degumming the fiber. The removal of gum is more easily accomplished, whether by mechanical or chemical means, when the fiber is still green. Strong solutions affect the quality of the fiber, so dilute chemical solutions are being tried experimentally, but so far, the weak solutions do not remove

all of the gum. In China, crude implements of bone or sharp bamboo are used for scraping the cortical tissue from the fibers. Mechanical methods have in this country been dismissed as a potentiality.

Drying and Baling. This final step of preparing ramie for shipment to factories offers no serious problem, other than the cost of drying. On the north Haiti irrigated ramie plantation, the degummed fiber is dehydrated in a centrifugal and then laid out on wires to dry in the sun. In our humid South the drying process would obviously have to be done indoors. In Texas and California drying could be done in "Haitian style." There are no cost figures available for the drying and baling processes.

Economic Considerations

Figures for the over-all cost of producing ramie vary with the source of information and place of experimentation. The Office of Production Research and Development of the War Production Board recently made an estimate of the growing cost (in the favorable natural environment, the northern Everglades) to be $36.00 an acre, based upon a yield of 1200 pounds for the second and succeeding years, or $0.09 per pound of Grade A fiber. A higher estimate was made recently by A. C. Whitford, a research chemist of Alfred, New York, of $49.50 (yield of 1500 pounds) for the second and subsequent years, or 10.1 cents per pound of finished fiber ready for manufacturer. In the early 'thirties the Louisiana estimate was $27.50 per acre, with harvesting costs unknown.

A break down of cost items reveals that the first year's expense is about double that of the second and succeeding years, largely attributable to the initial cost of root segments, preparation of land, and large labor requirement. The initial cost of machinery is a further financial problem to be solved either by the pooling of interests, or by handling of the crop by corporations as a side enterprise. The cost of harvesting and stripping leaves and tops averages $10.00 per acre, the three annual cuttings totaling $30.00.

Decortication and degumming run the cost of pure fiber to around $0.18 per pound. Mr. William B. Dall, managing editor of *The Textile World,* in discussing ramie in the December, 1945 issue, says that this cost item is too high to compete with the imported product. To be remembered, however, is that Oriental imports are not Grade A and have been the subject of complaints because of their weakness and brittleness. Furthermore, several New England

textile executives, when shown United States-produced Grade A fiber, were willing to pay high prices of sixty cents per pound for experimental purposes, and the same price later, assuming that the market for ramie products or part-ramie goods was assured. At least two of the three ramie companies in Florida, namely, Newport Industries, Inc., of Pensacola, and Florida Ramie Products, of West Palm Beach, believe that they can pull down the cost by the sale of a by-product, the high-in-protein stock feed (meal) extracted from ramie tops. (Three tons of dehydrated cattle feed can be expected per acre in the Everglades with a present market value in Florida of $60.00 to $65.00 per ton.)

No other economic considerations would seriously retard the ramie industry. The transportation factor seems negligible, even tho some mills in the northeastern states would probably use the fiber. It is likely that several southern mills would be built to fabricate ramie products and some present mills could handle the fiber. With technological gains and increased mechanization in handling the crop from field to factory, the labor problem would seem small. Consumer demand for tougher fabrics seems well assured. With lowered costs of home-produced fiber, ramie should be able to withstand competition with other fibers now in use, including the synthetics.

PATENTS AND POSSIBILITIES

More than a thousand patents covering ramie decorticating machines are reported to be recorded in Washington, but none of these has satisfactorily turned out commercially important quantities of the fiber. At present six or seven machines perform a doubtfully successful job of decorticating ramie; none is commercially available at present. Different principles of mechanism are employed in operation of the different machines, both foreign and domestic. Each machine has its own supporters. Some machines embody new principles, but no data concerning their characteristics are now available.

What then is the final appraisal of ramie production? Domestic production seems to be awaiting successful completion of machines to decorticate and degum ramie. Once machines are perfected, predictions are that costs can be substantially lowered and thus eliminate the cost barrier. When low costs can give a pure Grade A fiber, the manufacture of a rather wide variety of products will follow. It is generally thought among promoters and

specialists that ramie will not revolutionize the textile industry, but they believe that ramie's special attributes, already mentioned, will be utilized in many ways—even for stronger shoestrings!

If and when ramie production becomes a reality, it will fit into the over-all pattern of southern farm economy as a supplemental, rather than as primary cash crop. At first ramie plantations will be locally placed upon selected productive soils in the lower South where exacting climatic requirements of the plant would also be met. Later ramie may spread to owner-operated farms or cattle farms whose owners have the necessary cash and energy to grow the plant as a side enterprise in their diversification programs. These same farmers would likely take the crop to nearby processing plants, as in the case of peanuts. From the physical point of view, there are no major difficulties in growing ramie. Within the next several years we should have sufficient evidence, favorable or unfavorable, as to the economic hurdles which now confront the infant ramie industry. The evidence needs to be clear before ramie is incorporated into southern farm economy.

TOOLS OF RESEARCH

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There are certain basic books which every research worker in the field of geography knows. There are others with which many geographers are not acquainted due to the fact that geography branches into many diverse fields.

Periodicals are perhaps of more value to the geography researcher than other publications. The material is naturally more recent than that found in books. Articles are done on small subjects such as *Land Utilization in the Guanacaste Province of Costa Rica*, the *Rhine Distributaries and Land Reclamation in the Netherlands*, or the *Jicarilla Indian Country of New Mexico*. Books cover wider latitudes and will often have but a paragraph or a sentence on the subject of interest to the researcher.

PERIODICALS

The periodicals in the field of geography are rather numerous and are from a number of countries which adds to their diversity.

American

The American geographical journals are no doubt the most familiar:

Acta Americana, 1943-date.
American Meteorological Society. Bulletin. 1920-date.
Association of American Geographers. Annals. 1911-date.
Economic Geography. 1925-date.
Geographical Review. 1916-date.
Geographical Society of Philadelphia. Bulletin. 1893-1938.
Geological Society of America. Bulletin. 1888-date.
Journal of Aeronautical Meteorology. 1944-date.
Journal of Geography. 1902-date.
Journal of Geomorphology. 1938-date.
Journal of Meteorology. 1944-date.
National Geographic Magazine. 1888-date.

English and British

The English journals are more difficult to secure in libraries in the United States. They are:

Geographical Journal. 1893-date.
Geographical Magazine. 1935-date.
Geography. 1901-date.
Manchester Geographical Society. Journal. 1885-date.
Royal Meteorological Society of London. Quarterly Journal. 1871-date.

Some of the better known journals from other countries are:

Geographical Society of Ireland. Bulletin. 1944-date.
The Scottish Geographical Magazine. 1885-date.
New Zealand Geography. 1945-date.
Canadian Geographical Journal. 1930-date.
Calcutta Geographical Review. 1936-date.
Indian Geographical Journal. 1926-date.

French and Belgian

Géographie. 1900-1939.
Annales de Géographie. 1891-date. (Absorbed Géographie in 1940)
Société Royale Belge de Géographie, Brussels. Bulletin. 1876-date.

German

Geographische Gesellschaft in Wien. Mittheilungen. 1857-date.
Geographische Zeitschrift. 1895-date.
Geographischer Anzeiger. 1900-date.
Geographisches Jahrbuch. 1866-date.
Gesellschaft für Erdkunde zu Berlin. Zeitschrift. 1853-date.
Kartographische und Schulgeographische Zeitschrift. 1912-1922.
Zeitschrift für Erdkunde. 1933-date.
Zeitschrift für Geopolitik. 1924-date.

Finnish, Swedish, Spanish, Latin American

Acta Geographica. 1927-date.
Geografiska Annaler. 1919-date.
Sociedad Geográfica Nacional, Madrid. Boletin. 1876-date.
Boletin de la Sociedad Mexicana de Geografia y Estadística. 1839-date.
Revista Geográfica (Mexican). 1941-date.
Sociedad Geográfica de Lima. Boletin. 1891-date.

There are other journals published by various Latin American countries but the articles are largely localized as those in the *Boletin de la Junta Auxiliar Jalisciense de la Sociedad Mexicana de Geográfia y Estadística.*

In addition to these and other magazines of pure geography, there are many journals which publish articles of vital importance to the geographer. These journals cover a wide range. A few of them are *Fortune, Commonweal,* the *Survey, Business Week,* and the *Scientific Monthly.* In doing research, it is impossible to consult the index to each of some one hundred magazines which often print geographical articles. It is therefore necessary to become acquainted with various magazine indexes: the *Readers' Guide,* the *International Index,* the *P.A.I.S.,* the *Industrial Arts Index,* and the *Education Index.* The articles are not indexed in as great detail in these indexes as they would be in an individual magazine index, i.e., that of the *Geographical Review.* However, with the combina-

tion of common sense, patience, and a knowledge of geography, the most important articles can be ferreted out of the indexes without too much difficulty.

Another type of magazine is one devoted to some particular country, e.g., *Indian Information, American Scandinavian Review* and *Belgium*. These magazines are devoted to articles about their own country. Naturally, economical, political, historical, literary and geographical articles appear. As a rule, these journals are not indexed and the only way to know of such a magazine is to consult your librarian. I am here enumerating the magazines on the U.S.S.R. which contain geographical articles.

Economic Review of the Soviet Union. 1926-1935.
Information Bulletin. (Embassy of the Union of Soviet Socialist Republics) 1941-date.
Russian Orthodox Journal. 1927-date.
Soviet Culture in Wartime. 1943?-date.
Soviet Russia Today. 1932-date.
Soviet Union Review, 1923-1934.
Sovietland. 1932-date.
U.S.S.R. in Construction. 1930-date.
V.O.K.S. Bulletin. 1930-date.

In a recent issue of V.O.K.S., two articles of importance to geographers appeared. "Stalin and Aviation" and "State Plan for Electrification of Railroads." The magazines concerning other countries will not be as numerous as those on Russia, but there is at least one magazine for each country of major importance and the articles included, usually written by specialists, are of major importance.

GOVERNMENT DOCUMENTS

Side by side with journals should be mentioned Government Documents for journals are also published by the government. The government journals for the geographer include the *Foreign Commerce Weekly, Foreign Agriculture, Foreign Crops and Markets,* and the *Monthly Weather Review*. The first three journals are indexed very incompletely in the *P.A.I.S.* and do not have adequate indexes of their own. Often times it is necessary to leaf thru the magazines themselves. Usually this is worth while for the articles are well done and unique, such as:

Agriculture in Guam. *Foreign Agriculture,* October 1944.
The Mexican Beef Cattle Industry. *Foreign Agriculture,* November 1944.
India's Mineral Resources. *Foreign Commerce Weekly,* July 21, 1945.

Developing Brazil's Great Inland Waterways. *Foreign Commerce Weekly,* September 15, 1945.

Dairy Production Low in Republic of Panama. *Foreign Crops and Markets,* March 5, 1945.

Southwest Pacific Copra Production. *Foreign Crops and Markets,* April 9, 1945.

Each week the *Foreign Commerce Weekly,* in addition to major articles, has numerous short items arranged by country and commodity, e.g., in the September 1, 1945 issue under "construction" there are articles on irrigation projects in Australia, Chile and Mexico; in the August 11, 1945 issue, under Argentina appears "Development in Aviation"; in the June 30, 1945 issue, under "non-metallic minerals," there is an account of the discovery of a salt bed in Alberta, Canada. This type of information is valuable to the economic geographers.

The numerous bulletins and publications issued by the Department of Agriculture and the Department of Commerce often prove helpful but they are difficult to locate unless one acquaints oneself with the *Monthly Catalogue of Government Documents,* the *Document Catalog,* and the *Index to Publications of the U.S. Department of Agriculture.* These indexes should be consulted with the help of a Reference Librarian until the research worker becomes acquainted with the procedure.

There are certain government Documents which are vital reference tools for the geographer. They should become as familiar as Goode's Atlas. They are:

Clayton. World weather records.
Atlas of American agriculture.
Climatic summary of the United States.
War background series of the Smithsonian Institution.
Aerology series of the United States Navy.
The Industrial Reference Service.

Perhaps document material is little known because of the difficulty in using the indexes or perhaps the very name "document" inspires ideas of mustiness and age which could be of little use in the study of a subject as dynamic as geography. A list of miscellaneous publications follows in order to arouse an awareness in Government Documents—it is in *no* way inclusive.

U.S. Department of Commerce. Civil Aeronautics Administration.

"Realm of flight," presenting practical information about weather, by G. S. Stanton. 1946.

Power facilities of Venezuela. *Industrial Reference Service,* December 1945.

Summary of current economic information on U.S.S.R., *Industrial Reference Service,* January 1946.

Summary of current economic influences on Indo-China. *Industrial Reference Service,* January 1946.

Highways of Colombia. *Industrial Reference Service,* January 1946.

Rice in Argentina. *Industrial Reference Service,* March 1946.

U.S. Office of Foreign Agricultural Relations.
"Agricultural geography of the Philippine Islands," by B. G. Hainsworth and R. T. Moyer. 1945.

U.S. Office of Emergency Management. Office of Inter-American Affairs. Research Division. Social and Geographic Sections.
Individual monographs on the forest legislation of each of the Latin American countries. 1945.

U.S. Tariff Commission.
Japanese trade studies. Special industry analysis #1-37, 1944-45.

Bibliographies

Bibliographies are guides to materials and without them, life would be even more difficult for the research worker than it is at present.

Six bibliographies have done much for the geographer. They are *Bibliographie Géographique Internationale* of the Association de Géographes Français which lists books and articles by region; *Current Geographical Publications* published by the American Geographical Society, with the material arranged by continents; the *Bibliography of Agriculture* published by the United States Government and arranged by subject, i.e., forestry, agricultural products, soils and fertilizers; the *Bibliography of Meteorological Literature* issued by the Royal Meteorological Society; the *Handbook of Latin American Studies* arranged by country and published by the Harvard University Press; and finally, the *Pan American Bookshelf* published by the Pan American Union and arranged by subject, i.e., agriculture, economics, sociology. Bibliographies are also found at the end of books, chapters, articles, theses and in footnotes. One article or book may be of little value but the bibliographies cited may be of colossal importance.

A general Index to Bibliographies called the *Bibliographic Index* and published by the H. W. Wilson Company was first published in 1937. It is issued annually with five year cumulations. This is valuable to geographers for it indexes bibliographies in various geographical fields such as Anthropogeography, Geopolitics, Globes, Maps, Physical Geography, and Voyages and Travels.

Reference Books

Special reference books in geography are few in number. Of course we have many atlases such as Goode, Stieler, Oxford and the Great Soviet Atlas. The *Geographie Universelle* covering the earth by continents is a monumental work as is Petermann's *Geographische Mitteilungen.* Smith's *Dictionary of Greek and Roman Geography* is an interesting title of the past and the reports of the International geographical congress published since 1871 should prove useful. There are no encyclopedias or dictionaries of geography. Fortunately, we do have a very recent dictionary for the pronunciation of proper names, Greet's *World Words.* However, Russian place names are more or less omitted and we certainly could use a little help with such names as Anzhero-Sudzhensk, Ulan Ude, and Birobidzhan.

The many books written in the field of geography and on different regions must be found in the card catalog of the library, in the Trade Catalogs of various nations or thru bibliographies.

Library Card Catalog

Bibliographies can be found only after books or articles have been secured which contain the bibliographies. The card catalog is difficult to use, the library world has not as yet become geography conscious and the subject headings are not uniform, e.g., three books, Carlson, F. A., *Geography of Latin America,* James, P. E., *Latin America,* and Jones, C. F., *South America,* have entirely different subject headings in most catalogs. The first has the subject headings, Spanish America—Description and travel; Physical Geography—South America; Physical Geography—Mexico; Physical Geography—Central America; the second, Spanish America; and the third, South America; South America—Economic conditions and South America—Industry. The assistance of the librarian should therefore be enlisted before the card catalog is even

approached until the research worker gains experience in the use of the catalog. There are always two approaches to the catalog. The easiest is of course by region but not all of the books about Russia are under Russia in the catalog but rather under subject, subdivided by country, i.e., Agriculture—Russia; Peasantry—Russia, etc. These subjects are not as simple and as detailed as they are in the magazine indexes for it is necessary to use broader subject headings, i.e., soils not podsols or chernozems; Russia, Asiatic and Siberia not Baikalia; the best studies of Chinese life are found not under China but under Anthropogeography—China; material on the air transport of the Pacific area will be found under Aeronautics, Commercial *not* under Pacific. In addition, it must be remembered that many books listed under a general subject such as geography may have a chapter or two on the exact subject in which you are interested, e.g., hill geography in *Geography* by White and Renner, and in *Compass of the World* by Stefansson and Weigert, there is an excellent chapter on world airways. It will not help you to seek a stack permit from the Head Librarian in order to find your own material in the stack for there is no place in the library classification schemes for geography; there are a few books in the G classification of the Library of Congress classification, it is true, but the majority of the books are scattered thru the D, E, F, H, J, Q and U classifications. Examples of books with these various classifications are listed below.

D—Newbigin, M. I.: *The Mediterranean Land.*
E—Brigham, A. P.: *Geographic influences in American History.*
F—Atwood, W. W.: *The Rocky Mountains.*
G—Semple, E. C.: *Influences of geographic environment.*
H—Smith, J. R.: *North America.*
J—Peattie, R.: *Look to the Frontiers, a Geography for the Peace Table.*
Q—Blair, T. A.: *Climatology.*
U—Peattie, R.: *How to Read Military Maps.*

The Library of Congress system is the classification used in practically all large college and university libraries. The Dewey classification is common in smaller libraries.

It is futile to be disgusted with the card catalog. It can be used with a little experience and intelligence. Libraries function for scholars in all fields, not for just the geographer. The classification scheme and subject headings have been worked out to the advantage of all.

Trade Catalogs

The trade catalogs listing all the books which have been printed in various nations during a calendar year may be used advantageously—the *United States Catalog* (currently called the Cumulative Book Index); the English *Whitakers Cumulative Book List,* the French *Biblio,* etc., there being at least one trade catalog for each important country. Go to your library after reading this article and become acquainted with your geographical research tools. Papers, talks and lesson plans will become a pleasure rather than the bug bear which they have seemed thru the years.

JAPAN: MAIN POPULATION CONCENTRATIONS

Lawrence A. Hoffman
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A striking feature of Japanese population distribution is its concentration in favored lowland areas, with most of the intervening country relatively thinly-settled and little productive.

The prewar area of Japan Proper was less than that of California, of Germany, or of France, and little of this small area was really of much value. Three-quarters of the country supported only one-quarter of the prewar population, who in turn supplied only about a seventh of the prewar national production. The remaining one-quarter of the country, consisting mainly of favored lowland areas, was smaller than Virginia, and supported 20 times the population of that state.

Land-Use Concentrations

Within limits set by their political and social environment, people generally tend to live where they think they can best make a living. Since the Japanese population lives crowded in such a small part of their total area, there must be certain disadvantages in the physical environment to eliminate much of the country from more intensive use. The reasons for the small proportion of the total Japanese population in the poorer three-quarters of the country center around the less productive land-use of these areas, which in turn is partly based on less favorable topography, soil, climate, and water supply

By far the largest item of land-use in Japan is that of forest land, which occupies most of the rough and infertile areas. About 55 per cent of the country is now in forests, and at least another 10 per cent, now treeless, is unsuited for other more productive use. These forest lands contributed about 1 per cent of the prewar national production. They afforded full-time employment to about 1 per cent of the gainfully-occupied labor force, with part-time employment to another 4 per cent, mainly farmers who cut timber and firewood during their slack season. It should not be assumed, of course, that forest production was insignificant. The yield included fuel, building materials, industrial raw materials, and some food and medicinal products. A good part of the mineral production of Japan came from spots in the rugged, forested hill and mountain lands. Most of the hydroelectric power of Japan, which supplied over four-fifths of the total prewar electric power production, came from these same rugged highland areas.

The seas around Japan were as important to the prewar Japanese economy as the forested half of the country. The prewar income from fisheries was about twice that received from the forest industries. About 2 per cent of the gainfully-occupied were employed full-time in fishing, and about another 5 per cent were seasonal fishermen or workers in fish-culture and fish-processing industries. It has been estimated that as many as one-fifth of the entire population received at least part of their income from the fishing industry.

The cultivated area, that part of Japan which contributed substantially to Japanese primary production and population support, was only 16 per cent (23,275 square miles) of the land area in 1938. Counting fields which were double and triple cropped, and areas which carried tree crops, the total crop area was about a third larger. About two-fifths of the gainfully-occupied in 1940 were employed in agriculture, including those who were also engaged in subsidiary occupations. The net value of agricultural products in 1939 (some 1 billion dollars) was about a quarter of the net value of the total national production.

ISLAND CONCENTRATIONS

Japan Proper consists of four large islands—Honshu, Kyushu, Shikoku, and Hokkaido—and many smaller adjacent ones. The con-

centrations of Japanese population are as evident in considering island units as in studying land-use regions.

Honshu is by far the most important of the four main islands, comprising three-fifths of the area of Japan Proper and containing over three-quarters of the prewar Japanese population. About four-fifths of the prewar Japanese production came from Honshu.

Kyushu is second in importance, having about an eighth of the total area and a seventh of the total population. Probably the two-thirds of the prewar national coal production and nearly half of the prewar national steel production were Kyushu's chief contributions to the rest of the Japanese economy.

The remaining two islands, Shikoku and Hokkaido, each had one-twentieth of the total population, but Shikoku has the same proportion of the total area while Hokkaido occupies almost a quarter of the total area. Both islands together supplied only half of the prewar production of Kyushu, or less than a tenth that of Honshu.

Urban Concentrations

Almost two-fifths of the 1940 total Japanese population of 73.1 million was concentrated in the 168 official cities (shi) whose political areas are shown in black on the accompanying map. These 168 official cities occupied only 2 per cent of the area of Japan Proper. With one exception, the official cities were over 25,000 inhabitants each.

Six of the official cities (Tokyo, Osaka, Nagoya, Kyoto, Yokohama, and Kobe) together contained half of the 1940 city population, which amounted to a fifth of the total population of Japan Proper on less than one-half of one per cent of the total area.

Another 9 million (12 per cent) of the 1940 Japanese population lived in townships (machi) over 10,000 inhabitants each in size. In many cases, the main settlement within the township or machi was very large and was urban in function; however, since available data does not indicate which machi over 10,000 were urban in function and which were mainly rural in function, these 9 million population have been considered rural in this article, altho it is recognized that this was not strictly true in many cases.

The Main Belt of Population

Well over three-fifths of the total prewar Japanese population lived in a long narrow belt along the southern coast of Honshu and

the northern coasts of Kyushu and Shikoku, on less than a fifth of Japan Proper.

This belt of concentrated population was only some 28,300 square miles in extent, or a trifle larger than West Virginia. With more than 45 million Japanese dwelling there in 1940, the average density of population within the belt was 1,600 per square mile, as compared with a density of 234 per square mile outside the belt.

In 1940, 110 of the 168 official cities were in the main belt. These 110 cities had a combined population of 23.5 million, which was over half of the total population of the belt. The communities in the belt outside the 110 shi had a population of 21.7 million; the average density of this rural population was 835 persons per square mile.

The four main nodes within the belt—Kwanto, Ise, Kinki, and North Kyushu—had over half of the total Japanese population on one-seventh of the total area, and included over three-quarters of the Japanese official city population.

LAND-USE IN THE MAIN BELT

Altho the main population belt is shown on the accompanying map as an uninterrupted stretch, it was not all good land. Only 35 per cent of the belt was actually cultivated. The remainder was mainly in forests, pasture, and wasteland, or was occupied by facilities. Each one of the seven areas within the main belt had from 30 to 45 per cent of its total area under cultivation. In 1939, the cultivated area within the belt amounted to some 10,000 square miles, or 43 per cent of all the Japanese cultivated land. Relatively, the agriculture of the belt was more important than that proportion might suggest. About 49 per cent of the rice land and 68 per cent of the wheat land was in the belt. Also the figures just given concern only cultivated land; since most of the land in Japan that was double and triple cropped was in the belt, the proportion of crop land was over half of the total. The crops grown in the belt included large proportions of the more valuable ones, and thus some 55 per cent of the agricultural production of the country was grown in the belt. By far the most important land resources of Japan are concentrated in this relatively small area.

INDUSTRY IN THE MAIN BELT

Prewar Japanese industrial production was even more concentrated in the main belt of population than was agricultural produc-

tion. Of the 3.2 million Japanese factory workers in 1938, some four-fifths were in this main belt. They produced about 88 per cent of the 2.5 billion dollars estimated net value of industrial production for that year.

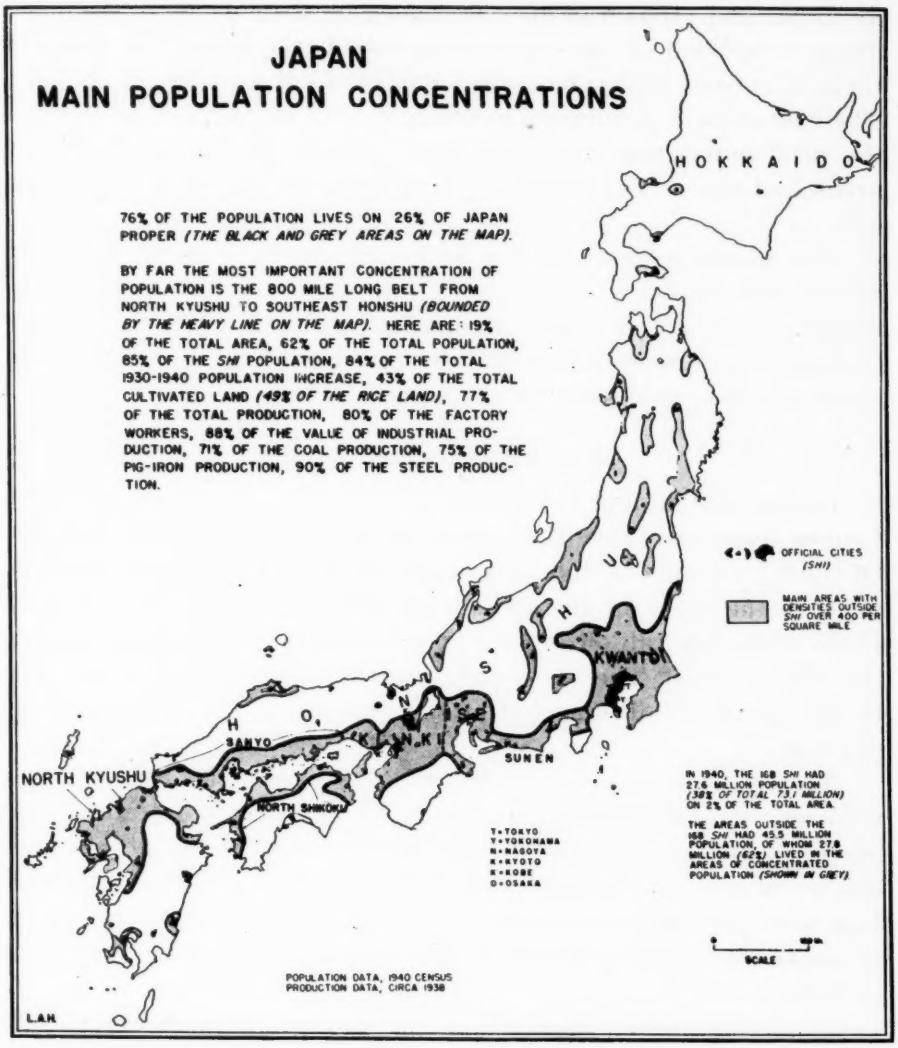
The following proportions of Japanese industrial output came from factories in the main belt of population: cotton thread, 79 per cent; cotton cloth, 98 per cent; woolen cloth, 44 per cent; machines and tools, 88 per cent; industrial chemicals, 80 per cent; and all metal products, 88 per cent.

Manufacturing in the belt was rather unevenly distributed, with definite areas of concentration: the Kwanto and Kinki nodes each produced three-tenths of the total production, the North Kyushu and Ise nodes contributed about one-tenth each, and the three minor areas (Sanyo, North Shikoku, and Sunen) together produced about one-tenth of the value of production.

The Ise and Kinki nodes were especially important in cotton thread production, while they and the Sunen area produced over three-quarters of the cotton cloth of Japan in 1938. The Kwanto and Kinki nodes produced about 70 per cent of the Japanese machinery and tool output. Kwanto, Kinki, Sanyo, and North Kyushu all produced substantial amounts of industrial chemicals. The Kwanto, Kinki, and North Kyushu nodes predominated in metal production and processing.

Most of the prewar Japanese heavy industry was in the main belt. Almost three-fifths of the proved and probable coal reserves of Japan are in the main belt, almost half of the total being in North Kyushu. Over seven-tenths of the prewar coal production came from this main belt, practically all of it from North Kyushu. About three-quarters of the pig iron production and nine-tenths of the steel production were in the belt, with the North Kyushu and Kinki nodes together producing about three-fifths of the iron and three-quarters of the steel.

There was a striking shift in the distribution of Japanese heavy industry in the decade preceding the war. In the early 1930's about three-quarters of Japanese heavy industry was in North Kyushu. In the next decade, absolute production in North Kyushu increased, but new furnaces and mills in Kinki and Kwanto decreased the relative importance of North Kyushu heavy industry to about two-fifths of the total output.


JAPAN
MAIN POPULATION CONCENTRATIONS
76% OF THE POPULATION LIVES ON 26% OF JAPAN PROPER (THE BLACK AND GREY AREAS ON THE MAP).
BY FAR THE MOST IMPORTANT CONCENTRATION OF POPULATION IS THE 800 MILE LONG BELT FROM NORTH KYUSHU TO SOUTHEAST HONSHU (BOUNDED BY THE HEAVY LINE ON THE MAP). HERE ARE: 19% OF THE TOTAL AREA, 62% OF THE TOTAL POPULATION, 85% OF THE SHI POPULATION, 84% OF THE TOTAL 1930-1940 POPULATION INCREASE, 43% OF THE TOTAL CULTIVATED LAND (49% OF THE RICE LAND), 77% OF THE TOTAL PRODUCTION, 80% OF THE FACTORY WORKERS, 88% OF THE VALUE OF INDUSTRIAL PRODUCTION, 71% OF THE COAL PRODUCTION, 75% OF THE PIG-IRON PRODUCTION, 90% OF THE STEEL PRODUCTION.
HOKKAIDO
OFFICIAL CITIES (SHI)
MAIN AREAS WITH DENSITIES OUTSIDE SHI OVER 400 PER SQUARE MILE
KWANTO
SUNEN
SANYO
NORTH KYUSHU
NORTH SHIKOKU
T=TOKYO
Y=YOKOHAMA
N=NAGOYA
K=KYOTO
K=KOBE
O=OSAKA
IN 1940, THE 168 SHI HAD 27.6 MILLION POPULATION (38% OF TOTAL 73.1 MILLION) ON 2% OF THE TOTAL AREA.
THE AREAS OUTSIDE THE 168 SHI HAD 45.5 MILLION POPULATION, OF WHOM 27.8 MILLION (62%) LIVED IN THE AREAS OF CONCENTRATED POPULATION (SHOWN IN GREY).
SCALE
POPULATION DATA, 1940 CENSUS
PRODUCTION DATA, CIRCA 1938
L.A.H.

SMALLER POPULATION CONCENTRATIONS

The four-fifths of Japan lying outside of the main belt of population had about 38 per cent of the total 1940 population, of which one-seventh lived in the 58 official cities in the region.

Most of the population lived in the relatively favorable river valleys, alluvial plains, mountain basins, and smoother hill slopes scattered among the rougher and less productive land which forms most of the area. The more important of these more favorable

areas of land (shown in grey on the accompanying map) occupied about 8 per cent of the entire area outside the main belt. Each of these 23 minor nodes had over 100,000 total population in 1940. Their aggregate population amounted to 9.3 million or one-third of the total population in all the areas outside the main belt. These areas had almost two-fifths of the cultivated land outside the main belt.

Considered as a whole, the areas left in white on the map had an average density of 170 persons per square mile. Actually, large mountain areas were almost uninhabited, while the population concentrated in numerous tiny valleys and basins often reached densities of many hundreds to the square mile.

CONCENTRATION OF INCREASE

During the decade from 1930 to 1940, the population of Japan Proper increased from 64.4 million to 73.1 million, or 13.5 per cent. Of the 8.7 million absolute increment, 5.9 million or 68 per cent took place in the areas of the 168 official cities or shi which existed in 1940; while 2.8 million or 32 per cent took place in areas outside the official cities. The shi population thus increased 27.1 per cent in the decade, while the rest of the population increased only 6.6 per cent.

Areally, this population increase was even more concentrated than was the total population. Some 84 per cent of the total Japanese population increase in the decade took place in the main belt of population. In 1930, this belt had 59 per cent of the total Japanese population; due to the disproportionate amount of increase there, it had increased to 62 per cent of the total population by 1940.

Of the 5.9 million increase in the shi population between 1930 and 1940, 92 per cent took place in the official cities of the main population belt. Communities other than shi in the main belt had only 46 per cent of the population of such communities in Japan in 1930, yet 66 per cent of the increase in such communities took place in those within the belt.

The Kwanto, Ise, Kinki, and North Kyushu nodes increased at a faster rate than did the total Japanese population, while the Sunen, North Shikoku, and Sanyo areas increased at a slower rate. The North Shikoku area increased only 4.3 per cent or less than the 5.2 per cent increase of the population outside the main belt.

PERSPECTIVE

Japan is essentially a hill country. Slopes are the dominant physical feature and lowlands occupy only 18 per cent of the total area. Like most of Monsoon Asia, Japan is fundamentally a river valley civilization, since practically all of its lowlands are of river deposition. The disadvantage of rough topography in much of the area is partly compensated by the relatively reliable humid climate, which greatly enhances the dependable agricultural production.

The fundamental theme of this article has been the concentration of prewar Japanese population, land resources, and productivity in the lowland areas. The grey areas on the accompanying map show most of the lowlands and adjacent hill lands that were thickly settled. Over three-quarters of the prewar Japanese population lived in these areas, which occupied only a quarter of the total area.

A number of lowlands in the southern part of Japan are close enough together to form a generalized belt of population. Here, on less than a fifth of Japan, were over three-fifths of the Japanese population, and an even larger proportion of the prewar productivity. From this main belt of population and productivity came most of the wartime power of Japan. In this same area are most of the resources and facilities that will have to sustain reconstructed Japan.

AN IOWA COURSE IN THE SOCIAL STUDIES

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In the fall of 1944 the Iowa State Department of Public Instruction at Des Moines published a Social Studies Handbook on which a committee appointed by the Department had been working for more than two years. The general aims of the course as shown in the Handbook are: to set up objectives for the whole course and to indicate the specific objectives for each year; to help teachers to develop better teaching methods and procedures; to so unify the work within the state that children moving from one county to another will neither be repeating, nor omitting great blocks of necessary material.

As soon as the Handbook, a volume of 365 pages, appeared it was distributed thru the county superintendents to each rural school, and from the office of the state superintendent to each city school. Its use has not been made compulsory. In the rural schools its use has helped to cut down the number of daily classes, since below the seventh grade history and geography do not appear on the program on the same day.

The philosophy underlying the social studies course is that given by Charles A. Beard in his book, *A Charter for the Social Sciences.* "The aim of the social studies is to give informed insight into man and society." Of course, many other subjects are involved in gaining this insight. These are touched on here only incidentally in reference lists. In this Handbook the subject matter deals with geography thru to the middle of the eighth grade, but with history only to the end of the sixth. For the seventh and eighth grades there is a separate Handbook on American History while at that level the geography deals in the main with other countries.

GENERAL OUTLINE OF COURSE

Grades II and III. Indian Life; Food, Clothing and Shelter of Iowa People Today and in Pioneer Days.

Grade IV. Unit I—Transportation; Units II to VIII—Food, Clothing and Shelter of People Today in Distant Lands.

Grade V. Units I to VIII—The United States; Unit IX—Distant Lands of the United States; Unit X—Canada.

Grade VI. Units I to X—The Eastern Mediterranean and Europe, including all of the U.S.S.R.

Grade VII and first half of Grade VIII. Units on China, Japan, India, the Southwest Pacific, Africa, several units on Latin America, and a unit on The United States and Its World Relations.

The work of the second and third grades is so planned that in a rural school the two grades may work together taking certain units in alternate years. In these geography and history are integrated. The first unit of the fourth grade is purely historical while the succeeding units deal only with geography. The fifth and sixth grades present a correlation of geography and history with the major emphasis on geography. Iowa high schools at present offer little work in geography but do give two or three years of history.

The first fifth grade unit is, "Iowa and the Corn Belt," and the eighth unit, "The Manufacturing Northeast." This indicates at once that the order of units is not the order of settlement of our country. A chronological history of the United States is taken in seventh and eighth grades and again in high school.

The first fifth grade unit opens with a consideration of the present day utilization of the resources of the Corn Belt followed by a discussion of the coming of the pioneers into the region. The second unit, "The Great Lakes Region," begins with the coming of the French fur traders followed by a discussion of the exploitation of the forests. This raises the problem of what men find to work at in the region today. This is in no sense a fusion course. The two disciplines maintain their integrity. It seems essential that children realize that what has happened in the past has had its influence on man's utilization of natural resources in a given region today. It is equally essential that children know what man is doing in the region today. This program involves the use of both history texts and geography texts.

Since geography, in the large sense, is an examination of the way man utilizes the resources of a given region, a logical division of our country is one that enables us to set off as units areas thruout which natural resources and man's major use of them are to a large extent the same. On this basis the United States in this course is divided into eight regions indicated on a map in the Handbook. This may seem too many, but a fairly persistent criticism of geography texts, made by teachers in the elementary grades, is

that the sections of the United States set forth in the texts are made too large. They include so great a diversity that children fail to see the outstanding individuality of the regions.

As in the fourth grade outline, a "Unit Objective," for the guidance of the teacher alone, opens each unit. It indicates the important lines which the teacher will hope to develop with the pupils thru the use of textual materials, pictures, maps, outside reading and class discussion.

The sixth grade units are countries or groups of countries. The opening unit deals with the Eastern Mediterranean—Egypt and Palestine. The major emphasis is on history. The same thing is true in the second unit—Greece. The contributions made by these countries in ages past are part of our heritage, but the importance of the countries in the world of today is small. The units in the sixth grade appear in an order suited to the presentation of history even tho, with the exception of the first two, the major emphasis is on geography.

The material outlined for seventh and eighth grades may be taken in any order. The Southwest Pacific is considered in two sub-units: 1. Tropical—Malaya, East Indies, Philippines; 2. Middle Latitude Lands—New Zealand and Southern Australia. South America was moved from its customary place in the fifth grade partly because the fifth graders have enough to do with the United States and Canada, partly because so little time and attention were being placed on South America when it was taught at fifth grade level that children received peculiar notions about the various countries. As stated before, this Handbook outlines no history for these grades. In the closing units an attempt is made to have the pupils gain some idea of the contacts which are made by the United States with other countries of the world thru voluntary organizations, thru diplomatic representatives, thru improved transportation and thru commerce.

THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

1946 ANNUAL BUSINESS MEETING OF THE BOARD OF DIRECTORS

The Board of Directors of the National Council of Geography Teachers met in the Ballroom of the Neil House at 2:00 P.M., December 28, President Katheryne Thomas Whittemore presiding.

The minutes of the last meetings of the National Council of Geography Teachers were approved as printed in the March, 1946 issue of the JOURNAL OF GEOGRAPHY.

Clyde F. Kohn, Secretary, reported on the membership of the National Council and on the activities of the Secretary's office during the past year. His report was accepted as read.

The Treasurer's report for 1946, audited by H. F. Raup, G. David Koch, and R. B. Frost, was read by John H. Garland, Treasurer, and approved.

The annual report of the *Committee on Standards of Certification for the Teaching of Geography in the High School* was distributed in mimeographed form, and its outstanding passages were read by A. H. Meyer, Chairman. The report was approved as distributed.

The report of the *Nominating Committee,* submitted by Miss Alice Foster, Chairman, Minnie Lemaire, and J. Allen Tower was read. Because no further nominations were made from the floor, P. E. James moved that the Secretary be instructed to cast an unanimous ballot for the candidates selected by the committee. The motion was carried. The following officers were elected to serve the National Council for the year 1947:

President	Alfred H. Meyer
First Vice-President	Tom Barton
Second Vice-President	Earl B. Shaw
Secretary	Clyde F. Kohn
Treasurer	John H. Garland

Katheryne Thomas Whittemore, Ina Cullom Robertson, and Agnes M. Allen were elected to serve for a term of three years on the Executive Committee. H. O. Lathrop was elected to serve for a term of five years on the Distinguished Service Award Committee; and Lillian Worley was elected a member of the Research Committee for a term of five years.

The report of the *Research Committee* was distributed in mimeographed form. J. Russel Whitaker suggested that the phrase "and the other authors" be inserted after the names of Drs. Almon E. Parkins and J. R. Whitaker in the fifth paragraph of the report. The report was accepted as amended.

The report of the *Public Relations Committee* was accepted as distributed in mimeographed form.

Clyde F. Kohn, chairman, presented the report of the Constitution Committee and recommended that the Constitution and By-Laws be amended as distributed in the mimeographed proposal sent to the Board of Directors in November, 1946. It was accepted with the following changes:

Article 4, Section 4 (Constitution), was changed to read: "The General Assembly shall consist of the National Council members present at the annual meeting."

Article 7 (Constitution) was changed to read, "Amendments to the Constitution or its By-Laws shall become effective if approved by a majority vote of the members of the Executive Board after notification at least a month in advance, and if approved by a majority of the General Assembly, provided that the proposed amendment has been included in the notice of the annual meeting." (The Secretary and Miss Foster were empowered to improve the wording of this Article.)

Article 7, Section 3 (By-Laws), shall be omitted and Sections 4 and 5 of Article 7 be renumbered.

The motion was made by Adelbert Botts and seconded by P. E. James that: "The present Executive Committee and officers shall be directed to put the new Constitution and By-Laws into effect by the first of February, 1947." Motion was carried. It is hoped that the new Constitution and By-Laws will be printed and distributed as soon as possible.

The following committee reports were accepted as distributed in mimeographed form at the annual meeting:

Committee on the Seal
Committee on Aviation Geography
Committee on the Evaluation of Army and Navy Programs in Geography
Committee on Tests
Committee on Inquiries
High School Curriculum Committee
Committee on the Yearbook for the National Council for the Social Studies
Committee on Publications
Committee on Geographic Education for World Understandings

The reports of the coordinators for the National Council and other organizations with comparable objectives were approved as distributed in mimeographed form at the annual meeting:

Tom Barton, Coordinator for N.C.G.T. and American Society for Professional Geographers

Villa Smith, Coordinator for N.C.G.T. and Central Association of Science and Mathematics

J. R. Whitaker, Coordinator for N.C.G.T. and National Council for the Social Studies

Erna Grassmuck Gilland, Coordinator for the N.C.G.T. and the National Education Association and the World Federation of Education Associations

The following report of the *Resolutions Committee* composed of Rose Zeller, chairman, Floy Hurlbut, and J. E. Switzer, was accepted:

"The Resolutions Committee wishes to present the following resolutions to the National Council of Geography Teachers assembled in the Neil House in Columbus, Ohio, December 27 and 28, 1946: Be It Resolved:

"1. That the sincere appreciation of the National Council be expressed to Professor Guy-Harold Smith and the individual members of his department in the Ohio State University; especially to Professor Fred Carlson and the members of his local committee for their careful preparation for the reception of the Council in Columbus, and for their willingness to fulfill the many wishes of the Council in making this meeting so successful.

"2. That the appreciation of the National Council be expressed to our president, Mrs. Katheryne Thomas Whittemore, and to the other officers for their efforts this year in putting the machinery of the National Council into operation in this first postwar year, and for the preparation and execution of the interesting, inspiring and instructive program.

"3. That the president of the Council be instructed to write letters of appreciation to the chairmen of the various committees, expressing the gratitude of the Council for their efforts in furthering the objectives of the organization.

"4. That the National Council recognize the great contributions of Dr. W. W. Atwood to this organization, and particularly the challenge of his key-note address delivered before the General Session of this meeting.

"5. That the sympathy of the National Council be extended to Dr. En-Lan Liu, Ginling College, Nanking, China, because of the accident which prevented the delivery of her message to the geography teachers of America.

"6. That the appreciation of the National Council be expressed to the management of the Neil House for its hospitality and for its suggestions and help in making this meeting so pleasant and profitable; and to Mary E. Case, president of the Ohio Council of Geography Teachers for her cordial greetings.

"7. That the Council again extend its appreciation and thanks to the editor of the JOURNAL OF GEOGRAPHY, George J. Miller, and to his associates for their splendid work in the official publication.

"8. That the Secretary be instructed to write a letter to the A. J. Nystrom and Company expressing the gratitude of the Council for its help in providing an up-to-date record of membership.

"9. That the appreciation of the National Council be expressed to the authors and editors of *Our Natural Resources and Their Conservation* for the royalties received during the year 1946.

"10. That the appreciation of the National Council be expressed to Alfred H. Meyer, and thru him, to the individual members of his committee for their help in the prepara-

tion of the Council's publication *Professional Paper No. 7,* College Geography and Its Relation to Teacher Training in Secondary School Geography."

"11. That the sympathy of the National Council be extended to Mrs. George Primmer and family. Dr. Primmer's passing has meant a distinct loss, not only to the Council, but to geography."

The meeting was then adjourned.

1946 ANNUAL BUSINESS MEETING OF THE EXECUTIVE COMMITTEE

The annual business meeting of the Executive Committee was held in two sessions.

First Session

The first session was called to order Saturday, December 28, 9:00 P.M., Room 490, Neil House, Columbus, Ohio, with President Katheryne Thomas Whittemore presiding. The session dealt mainly with the machinery necessary for putting the newly adopted Constitution into operation.

Mr. Garland moved that the term of the State Coordinators shall be for three years. The motion was seconded and approved.

Miss Foster moved that the Secretary appoint Coordinators to serve until affiliated state clubs or councils shall have elected Coordinators for their respective states, provided that the appointive term shall not exceed three years. The motion was seconded and carried.

Mr. Barton moved that the Research Committee as established on December 28, 1937, be continued with the same provisions. The motion was seconded and carried.

Mr. Tower moved that Lillian Worley's election to the Research Committee by the Board of Directors be confirmed by the Executive Committee. The motion was seconded and carried.

Mr. Tower moved that the Distinguished Service Award Committee be continued as set up with the exception that the members of the committee be elected by the Executive Board.

DISTINGUISHED SERVICE AWARD COMMITTEE

(a) The Distinguished Service Award Committee shall consist of five members, one member to be elected annually by the Executive Board for a term of five years. The President and Secretary of the National Council shall be *ex-officio* voting members. The term of office of each elected member shall be five years, one member to be elected annually. The member whose term expires first shall be chairman of the committee. Vacancies in the committee membership shall be filled for the unexpired term by the President with the approval of the Executive Board.

(b) The Award Committee may make and receive nominations to said committee. Such nominations must be accompanied by a full statement of the service rendered geographic education by the nominee.

(c) The Award Committee shall have full authority by unanimous consent to select the one upon whom the Distinguished Service Award is to be conferred, except that not more than one award shall be conferred in the same year without the approval of the Executive Board. The Distinguished Service Award shall be made at the annual meeting by the President of the National Council.

The motion was seconded and approved.

Mr. Tower moved that a Planning Committee consisting of three persons be appointed by the Executive Board. The duties of this committee shall be to survey the present and prospective program of the National Council and report to the Executive Board thereon prior to the next annual meeting. This committee shall serve for one year. The motion was seconded and carried. Mrs. Katheryne Thomas Whittemore, Alice Foster, and Tom Barton were appointed to serve on this committee.

Mr. Tower moved that a Publications Committee be created as follows:

PUBLICATIONS COMMITTEE

(a) The Publications Committee shall consist of five members, one to be elected annually by the Executive Board for a term of five years. The chairman of this committee shall be the member whose term expires first.

(b) The committee shall plan a publications program in the field of geographic education to be sponsored by the National Council; review manuscripts submitted to it for publication by the National Council and make recommendations thereon to the Executive Board. The committee shall also review requests for grants-in-aid from the Publication Fund for the publication of materials in geographic education and make recommendations thereon to the Executive Board.

The motion was seconded and approved.

The resolution of the American Society for Professional Geographers, protesting the omission of geography from the Harvard, Yale, and Princeton reports was not adopted.

The meeting was adjourned until Sunday morning.

Second Session

The second session of the Executive Committee was called to order Sunday morning at 9:00, December 29, in Room 490, Neil House, with President Katheryne Thomas Whittemore presiding.

Miss Foster moved that the incoming and outgoing presidents select the personnel of the Publications Committee. The motion was seconded and approved.

Mr. Cunningham moved that we dismiss the present Public Relations committee with thanks. Motion was seconded and approved.

Mr. Cunningham then moved that a Public Relations office be established, the Director of which shall be appointed by the Executive Board for a term of three years whose duties shall consist of (1) the dissemination of news to the public concerning the activities of the National Council; (2) the release to newspapers or syndicates and magazines, of publicity regarding geographic knowledge and information about timely events, and (3) such other activities as may from time to time seem desirable. Motion was seconded and approved.

Mr. Barton moved that David Swartz be appointed the Director of the Office of Public Relations. Motion seconded and approved.

Mr. Tower moved that the Committee on Tests be again instructed to continue the work necessary to complete the series of elementary school tests and that it should apply to the Research Committee for necessary funds. Motion seconded and approved.

Mr. Meyer moved that the present Committee on Standards of Certification for the Teaching of Geography in the High School be dismissed with thanks and that a new committee to be called the Committee on Standards of Teacher Preparation and Certification be established as follows:

COMMITTEE ON STANDARDS OF TEACHER PREPARATION AND CERTIFICATION

(a) The Committee on Standards of Teacher Preparation and Certification shall consist of five members to be elected by the Executive Board to serve for a term of five years.

(b) This committee shall set up standards of teacher preparation and certification for the teaching of geography in the public schools; endeavor to have these standards accepted in the several states; and concern itself with the improvement of college geography instruction as it relates to the training of teachers of geography.

(c) This committee shall keep in close touch with the several State Coordinators on all problems and plans dealing with the improvement of geography teaching standards.

The motion was seconded and approved.

Mr. Cunningham moved that the Executive Board delegate its powers to appoint the members of the Committee on Standards of Teacher Preparation and Certification to the president-elect, A. H. Meyer. The motion was seconded and approved.

Mr. Kohn moved that the Executive Board submit to the Planning Committee the various committee reports as distributed at the annual meeting of the National Council and approved by the Board of Directors on Saturday afternoon, December 28, and the reports of the group discussions of Friday morning, December 27, for consideration and recommendations to the Executive Board. The motion was seconded and approved.

Mr. Durand moved that the report of the Budget Committee be accepted with the following amendments: Committee work, $100.00; Traveling expenses for secretary, $25.00; Publications Fund, $50.00. It is estimated that the income for 1947 will be $890.00 and that the expenditures will be $972.00. The motion was seconded and approved.

Mr. Tower moved that the meeting be adjourned. Motion seconded and approved.

Respectfully submitted,
CLYDE F. KOHN, *Secretary*
National Council of Geography Teachers

THE TREASURER'S ANNUAL REPORT, 1946

NATIONAL COUNCIL OF GEOGRAPHY TEACHERS
JOHN H. GARLAND, *Treasurer*

Receipts

	General Fund	Research Fund	Total
Jan. 1, Balance forwarded	$ 605.27	$4,338.34	$4,943.61
A. J. Nystrom—subscription	614.95		
Contributing members	154.60		
McKnight and McKnight—royalties		172.91	
John Wiley and Sons—royalties		430.57	
Professional Paper No. 7		10.55	
Duluth National Bank—Interest		90.56	
	$1,374.82	$5,042.93	$6,417.75
Expenditures			
General—office of president and secretary	$ 393.20		
Standards Committee		$ 483.15	
	$ 981.62	$4,559.78	$5,541.40

December 16, 1946, Balance on hand in First National Bank, Champaign, Illinois

THE NATIONAL COUNCIL AT WORK

Under the new Constitution of the National Council, adopted at the Columbus meeting last December, the term of officers begins on the first day of February. At this same meeting the Executive Committee voted to continue the organization page in the JOURNAL. With this issue, then, we take over the responsibility so admirably carried out by the retiring President, Katheryne Thomas Whittemore.

The post-war reorganization of the work of the Council as provided for in the new Constitution, new committees, and new administrative procedures presents new approaches for achieving the aims set forth by the founders of the organization, namely: "(1) to lead superintendents and school boards to ask for teachers with adequate training for teaching geography, and as a result of this demand, lead normal schools to offer training; (2) to secure larger opportunities for prospective teachers to study geography in colleges and universities; (3) to instill new life and enthusiasm into geography teachers now at work; and (4) to study pedagogy of geography, secure thoughtful framing of courses of study by committees of experts, secure better and better maps and better and better textbooks."

This seems to be an opportune time to weigh our achievements against our aims as set forth above. Whatever variance of opinion there may be as to the extent to which we have progressed toward these various goals, one thing seems reasonably certain, that our annual programs thru the years have well served the purpose "to instill new life and enthusiasm into geography teachers now at work." Both the joint and sectional programs at Columbus were model demonstrations of constructive ideas and professional enthusiasm.

But translating the information and inspiration thus gained at the meetings to an adequately functioning basis seems as yet our most challenging issue. Just how far have we attained our goals with respect to aims one, two, and four? For example, apart from the recent war-inspired demands for teachers fully equipped to teach geography, just how much have superintendents and school boards *asked for* such teachers, especially on the secondary level?

"The National Council at Work," chosen originally for the title to head this page, aptly suggests the idea that the interest of Council members and the scope of the Council program must be operative thruout the year, if aims one, two, and four are to be realized. Moreover, this functional motivation seems to be the basis for the institution of new management procedures and special committees designed to attack specific problems to achieve our goals.

For over-all guidance, a Planning Committee will henceforth survey present and prospective problems of the Council. A system of Coordinators will tie in the work of state and regional councils with the National Council. The pedagogical program will be promoted in several ways: A geographic contribution will be made to the forthcoming Yearbook of the National Council for the Social Studies; the revamped "Standards" Committee is to function on a broader basis; the Committee on Tests is committed to prepare a standard test for the Fifth Grade; and the High School Committee is to provide us with an adequate secondary school geography curriculum. The personnel and functions of these and other committees will be reported upon from time to time.

Plan now to attend the next annual meeting on December 27, 28, and 29, at the charming spot of Charlottesville, Virginia.

ALFRED H. MEYER, *President*

EDITORIAL NOTES AND NEWS

It is reported that the world, excluding Russia, will probably need about seven million barrels of petroleum daily during this year, and this need probably will be increased by 16 per cent by 1950. Altho research has brought out many very significant and even spectacular new uses for oil, its principal use is still as a fuel. Thus, about 75 per cent of the world's merchant fleet now burns oil as compared with only 4 per cent in 1914. Also, Diesel horsepower installations in the United States increased from five and a half million in 1935 to about 45 million in 1946, and the number of homes having oil-heating units doubled in the same period. In what ways will this demand for liquid fuels be met? Your class may enjoy taking this question as a project to investigate.

If your vacation includes hiking trips in the Katahdin Region, Maine, you may be interested in securing these maps issued by the Maine Appalachian Trail Club (Inc.): Map No. 3 A. Lower Pond Regions; and Map No. 3 A. The Traveler. Data presented cover topography, surface waters, trails, roads, and campsites. They may be secured at nominal cost from the Appalachian Trails Conference, 808 17th St., N.W., Washington 6, D.C.

As a public service to teachers, General Mills, Inc., 400 Second Avenue South, Minneapolis, Minn. will send you free a copy of the United Nations Poster. One side of the poster features in easily-read print the preamble to the Charter of the United States.

The Geography Club of Western Pennsylvania is having a dinner meeting on February 22, at which Dr. Clark, of Carnegie Museum, will speak on "Thru the Backdoor of China." The officers of the Club are J. Warren Nystrom, University of Pittsburgh, President; Lavina Henderson, University of Pittsburgh, Vice-President; Sarah Butz, McKeesport, Secretary; and Elizabeth Glass, Penn Township, Treasurer. This active club publishes the *Geography News Bulletin* which always features a few short articles and interesting news items of the membership.

Continuous day and night flying on a commercial air line was recently inaugurated between Antofagasta, Chile, and Miami, Florida. The first scheduled flight was made in less than twenty-four hours with stops at Lima, Guayaquil, and Panama.

Did you know that the average banana-carrying ship entering the Port of New Orleans carries 45,000 stems? Some carry as many as 65,000 stems. Each banana conveyor on the wharves has an unloading capacity of 2,500 stems an hour. The average time for a ship to reach the Port from the Gulf is eight hours. This distance is 110 miles. There is no tide at the Port and that at the outlet of the Mississippi is less than two feet. The Port, which is owned by the state of Louisiana, has a frontage on the Mississippi and on the Inner Harbor Navigation or Industrial Canal which connects the river with Lake Ponchartrain. Depth afforded at the wharves is about thirty feet. Industrial plants, shipyards, wharves, and warehouses are maintained along this frontage. The Port has government and private barge-line services above New Orleans and also has a canal hookup with the Intracoastal Canal westward to Texas, while developments eastward are extending the canal hookup to Florida. Since bananas are only one product moving in and out of this port, your students may wish to analyze the other ways in which New Orleans functions and in what ways the local environmental factors aid or hinder this functioning.

A recent communication from Ch'ong Ju, Korea, announced that the first snow of the season fell on December 6, causing rejoicing among the children who were then able to slide over the frozen rice fields.

The Colorado State Experiment Station has recently released a collection of tested recipes which designate corrections for altitudes. At a 10,000 foot elevation, the temperature inside a baking cake may be 18° lower than at sea level due to lower boiling points. Cakes therefore may not have the structural strength to rise to usual heights unless the water content is increased. This is usually achieved by increasing the milk or water content. However, the type of shortening used is another contributive factor to successful baking, as is also the method of mixing the ingredients. Professional bakers as well as housewives are greatly aided by this research in altitude cookery.

GEOGRAPHICAL PUBLICATIONS

Walter Fitzgerald. **The New Europe—An Introduction to its Political Geography.** 290 pp. Harper & Brothers. 1946. Second edition. $2.75

The original volume appeared under the above title in England during World War II. In this, the second edition, published in New York, opportunity has been taken to bring the work down to date by including post war developments—especially those in Central Europe and the Balkans where changes have been most marked.

Political geography is defined as the relation of the states, their organization and interrelation, to the physical environment. The author surveys each of the European nations in turn. He discusses the general character of the homeland, the boundaries, the ethnic and cultural status of the people, elements of unity and division and the general prospect for the future. Special attention is paid to the problem of boundaries —particularly those changes resulting from both World Wars. Most readers will agree with him that "the search for satisfactory defence lines is one of the most fruitless to which national statesmen are still committed," for, as he points out, an advantageous defence line for one state automatically places its neighbor at a corresponding strategic disadvantage.

The author feels that the needs of the world is not so much a territorial reapportionment according to some formula but a redistribution of population more in accord with the ability of the various regions to support them. Most readers, however, will also want some assurance that the birthrate will also be regulated in accord with means of support. It will avail little to transfer families from central and south Italy to the Pampa if they proceed to overpopulate that plain as they have Italy.

We heartily agree with Professor Fitzgerald when he says, "some form of federation is necessary if civilization is to be preserved but that its concomitant—abolition of national sovereignty is not yet acceptable to the majority of nations." He feels that suspicions and hatreds in Europe are older, deeper and more widespread than elsewhere and have thus far blocked all attempts at international conciliation.

The appearance of the "New Europe" is most timely. The volume is interesting and realistic but does not draw a pleasant picture of that continent. It is a land where nature has been lavish but man is failing to measure up to the opportunities—a people, energetic, skilled but so divided into a patchwork of languages, religions, political ideologies and so embittered by hatred and by strife as to nullify all attempts to provide for the people who should share in its wealth. It will require a sound knowledge of the geographical and human factors which have largely shaped the Europe of today —combined with the best political wisdom to establish a peace which is something more than a truce for that troubled continent.

W. O. BLANCHARD

University of Illinois

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Dr. McCune was formerly an Assistant Professor of Geography at Ohio State University and is now Head of the Department of Geography at Colgate University. He is an authority upon the Far East, having spent many years of study and residence in Korea and other parts of eastern Asia.

World Events and Their Implications in the Geography Curriculum. By Eugene Van Cleef 91

Dr. Van Cleef is Professor of Geography at Ohio State University, the author of numerous geographical texts, and a frequent contributor to scientific and educational journals.

An Experiment in Conservation Education. By H. O. Lathrop 96

Dr. Lathrop is Professor of Geography, Illinois Normal University, Normal, Illinois, and author of "Conservation of Natural Resources."

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Dr. Smith is now Emeritus Professor of Geography, Columbia University. He is well known for his many books on the college level and his elementary and secondary school texts.

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Miss Johnson is a classroom teacher in Springfield, Massachusetts. She has also taught social studies in the Junior High School at Cromwell, Connecticut, and received her baccalaureate at Columbia University.

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Dr. Cooper is Professor of Geography and Geology at Ohio University, Athens, Ohio, and author of "The United States at Work," "Geography of Washington State," and is a frequent contributor to educational magazines.

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